IN THE FIELD

Field Museum
Member Magazine

Vol. 94, No. 2
Summer 2023

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ON THE COVER
Chicago-born Kumu Hula Lanialoha Lee (center-left) and other co-curators of Chicago's Legacy Hula pose for a photo on the lakefront. They are holding an ipu heke, a percussive implement made from two gourds, used to pa`i (beat) rhythms in Hula. Chicago's Legacy Hula honors Lanialoha's Kumu Hula (Master Hula Teachers), who were instrumental in perpetuating Hula in the Midwest.
ANNA ROSE II-EPSTEIN

Let us know your thoughts about *In The Field* magazine. Email your comments to ITF@fieldmuseum.org

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Dear Friends,

FIELD MUSEUM 2021 (KYLE FLUBACKER PHOTOGRAPHY)

Dinosaurs are an invitation to wonder. Many of our visitors are on a first-name basis with SUE. And Máximo has become an enormous greeter, attracting selfies and evoking neck-craning "wow"s.

This summer, we are welcoming a new dinosaur to Stanley Field Hall and hosting a "Dino Day" on June 12. *Spinosaurus aegyptiacus* is the largest carnivorous dinosaur yet discovered, and the Field Museum is the only place in North America to see a complete cast skeleton.

Our newest dinosaur is a ferocious welcome over the admissions desks in our largest hall—and also a symbol of research at the Field Museum. Associate Curator, Fossil Reptiles Jingmai O'Connor, PhD, and Postdoctoral Researcher Matteo Fabbri, PhD, have published groundbreaking insights on how the density of *Spinosaurus'* bones helped it remain submerged when hunting underwater. Dr. O'Connor will also be featured this summer in the newest installation of *The Changing Face of Science* exhibition series.

There is always something new to see and celebrate at the Field Museum. Thank you for joining us in continued discovery.

Warm regards,

Julian Siggers

Julian Siggers, PhD
President and CEO

Spinosaurus *at the Field Museum is part of the* Griffin Dinosaur Experience*, made possible by the generous support of Kenneth C. Griffin.*

LUCY HEWETT

In The Field Photography Contest

ENTER NOW!

At the Field Museum we encourage everyone to get outside and connect with the natural world and the human story. What better way than snapping a stunning photograph of the nature that's all around us? Join the Field family in an exclusive photography contest for members!

CATEGORIES:

Urban Wildlife
This category shows the cooperation or lack thereof of humanmade environments with the natural world.

Real-life Diorama
Inspired by the Field's renowned taxidermy dioramas, this category shows animals and plants in their natural habitat. This category can also contain landscapes.

Museum Moments
This category shows images of the Field Museum inside or outside the building, including the Museum Campus grounds, exhibitions, and dioramas. Portraits and candids of members and member families on their visit to the Museum are encouraged, with proper releases.

Kids can participate too! Each category will have two winners: one under 18 and one adult.

ZACH JOHNSTON

KYLE FLUBACKER PHOTOGRAPHY

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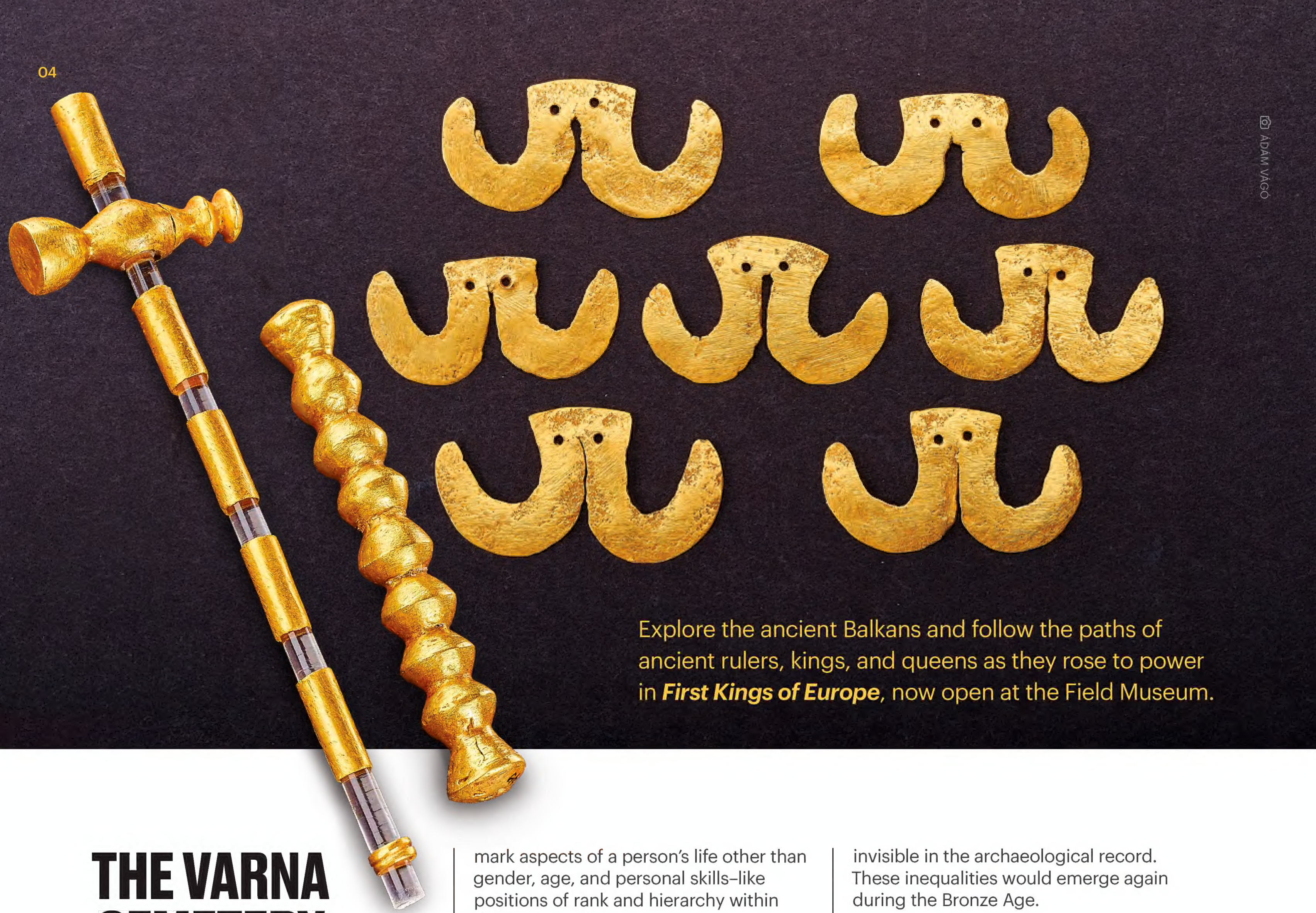
In The Field will be accepting submissions through August 1, 2023. Scan the QR code or visit the link below to submit!

**fieldmuseum.io/
field-photo-contest**

No purchase necessary. Open to Field Museum Members and their households aged 5 and up; participation by minors requires parental permission. Must be a legal U.S. resident. Contest begins 4/3/23 and ends 8/1/23. Void where prohibited. Official rules available at https://fieldmuseum.io/field-photo-contest.



ADAM VÁGÓ

Explore the ancient Balkans and follow the paths of ancient rulers, kings, and queens as they rose to power in ***First Kings of Europe***, now open at the Field Museum.

THE VARNA CEMETERY

BY BILL PARKINSON, PHD, CURATOR OF ANTHROPOLOGY, NEGAUNEE INTEGRATIVE RESEARCH CENTER; AND **ATTILA GYUCHA, PHD,** CURATOR, ASSISTANT PROFESSOR OF ANTHROPOLOGY, UNIVERSITY OF GEORGIA

Among the exquisite objects in *First Kings of Europe* is a set of grave goods from a Copper Age cemetery near the town of Varna in northeastern Bulgaria. The cemetery dates to 6,500 years ago and it marks one of the first times in the prehistory of the region that we find significant wealth buried in graves.

In burials throughout the preceding Neolithic period (about 8,000–6,500 years ago), when mourners placed grave goods with the dead, they frequently included objects that denoted different aspects of the individual's persona—a young woman may have been buried with a shell bracelet, and a young man may have been buried with a stone celt. However, during the Copper Age, the burial ritual began to mark aspects of a person's life other than gender, age, and personal skills–like positions of rank and hierarchy within their community.

Nowhere is this clearer than in the Copper Age cemeteries of Varna and Durankulak along the Black Sea coast of Bulgaria. In those cemeteries, during the middle of the fifth millennium BC, several hundred people were buried with unprecedented amounts of gold, carnelian, copper, and other rare objects that were used to mark the relative statuses of different people. One burial of an adult male at Varna contained almost a thousand gold artifacts and a variety of other objects made of exotic materials indicating the individual's outstanding status in the region. Other graves contained artifacts but no remains; these 'empty graves,' called 'cenotaphs,' most likely represent people who died elsewhere and for some reason were not brought to the cemetery to be buried.

While cemeteries like Varna illustrate flashes of emerging inequality and hierarchy within Copper Age communities, by 4000 BC, many of the economic and political inequalities seem to have diminished or become largely invisible in the archaeological record. These inequalities would emerge again during the Bronze Age.

First Kings of Europe was organized by the Field Museum. The exhibition has been made possible in part by a major grant from the National Endowment for the Humanities: Democracy demands wisdom.

NATIONAL ENDOWMENT FOR THE HUMANITIES

Any views, findings, conclusions, or recommendations expressed in this exhibition do not necessarily represent those of the National Endowment for the Humanities.

Field Museum Major Sponsor: DISCOVER

Generous foundation support provided by: AMERICA FOR BULGARIA FOUNDATION

(Above) Gold artifacts from Varna, Bulgaria.

GET UP CLOSE WITH THE FIELD'S LARGEST SNAKE

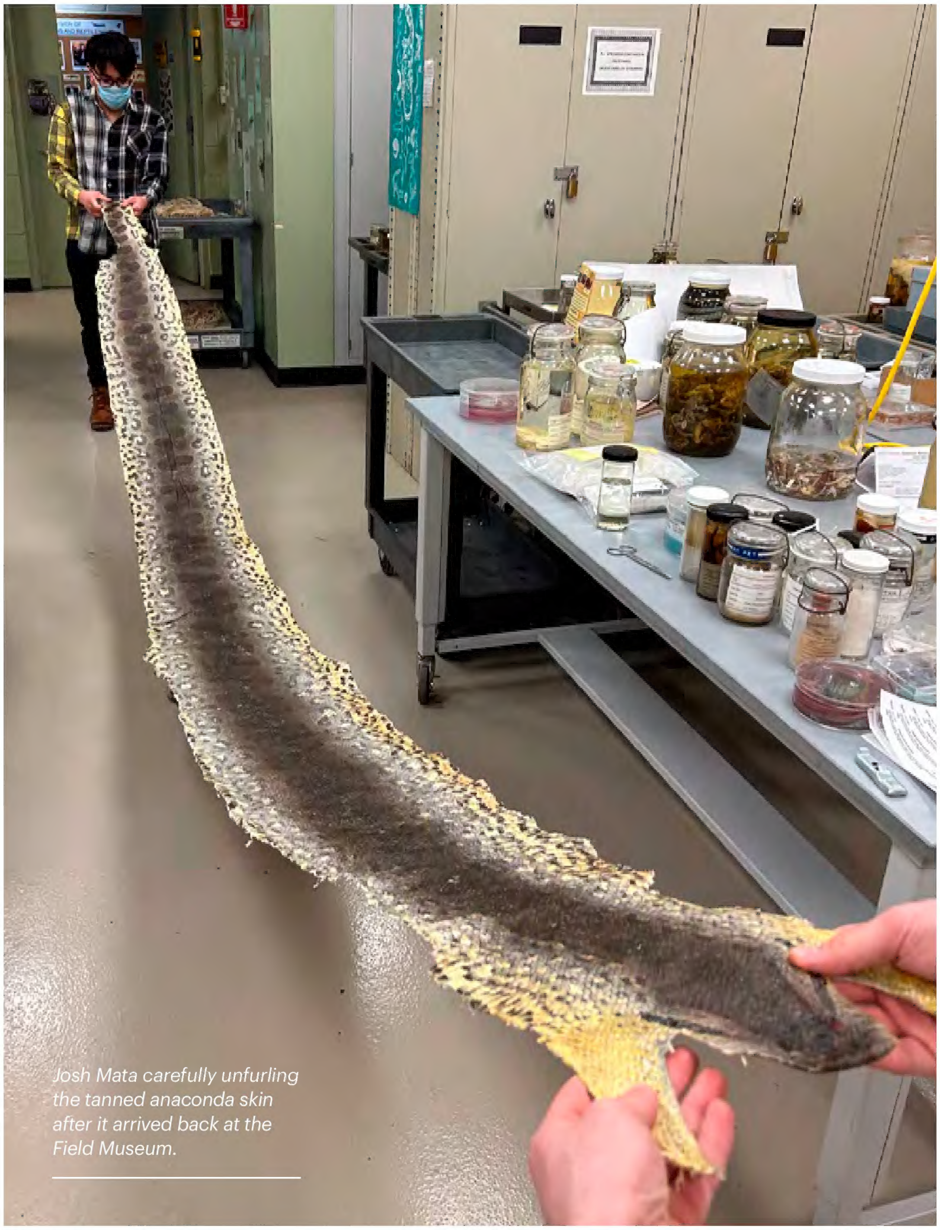
BY RUDY ALBSMEYER, PUBLIC LEARNING EXPERIENCES DIRECTOR

Eunectes murinus—the green anaconda—is the largest snake species in the world by weight. Like all boas, the green anaconda relies on constriction (not venom) to subdue their prey. The Field Museum recently received a donation of a 17-foot green anaconda specimen that will prove important to our herpetology collection for years to come. This specimen is now the largest snake in the Field's collection, and represents our only frozen anaconda tissue sample.

The *Grainger Science Hub* has become known for its hands-on activities and touchable specimens. In preparation for the *Anaconda* exhibition, Field Museum Assistant Collection Manager of Amphibians and Reptiles Josh Mata and I collaborated to have the anaconda skin preserved through a professional tanning process. This method ensures that the skin can be displayed open-air and safely touched in future education and outreach programs. By contrast, about 98% of the Field's nearly 300,000-specimen Amphibian and Reptile Collection is preserved in 70% ethanol alcohol, and therefore can only be handled by scientific staff and researchers.

To prepare for the exhibition's educational program, *Grainger Science Hub* Coordinators Esther Chavira, Gilleece Thorson, and I visited the Shedd Aquarium to learn more about live anaconda handling and care. We met with Jim Watson, Senior Aquarist of Animal Care and Science, and Beatrix, the 11-foot green anaconda who resides in the Shedd's Amazon Rising exhibit. Stemming from this meeting, we secured a loan of anaconda handling tools for display, along with a donation of a nearly-intact skin shedding from Beatrix.

Accompanying the massive anaconda skin and skeleton in the exhibition are nine additional snakes from the Field's collection. Featured specimens include a carpet python, a yellow-bellied sea snake, a paradise flying snake, and a king cobra.



Josh Mata carefully unfurling the tanned anaconda skin after it arrived back at the Field Museum.

RUDY ALBSMEYER

(Above) Beatrix, the Shedd Aquarium's green anaconda, exploring her habitat in the Amazon Rising exhibition.

SHEDD AQUARIUM

***Anaconda* is currently open in the *Grainger Science Hub*.**

A CHICAGO STORY
GENERATIONS IN THE MAKING

Standing tall—feet firmly planted in the grass—Lanialoha Lee looks east over Lake Michigan.

Just as the horizon starts to glow, she begins to chant. Like needle and thread, the poetic verse pulls together the folds of time. From a sticky September morning on the lakefront, to a house in Buffalo Grove where her grandmother began each day with those same words, to the shores of Hawai`i, where Kānaka Maoli (Native Hawaiians) have been looking east to greet the sunrise for generations, this is the story of hula.

ANNA ROSE II-EPSTEIN

By Kehaulani Lum
CO-CURATOR

Ryan Schuessler
EXHIBITION DEVELOPER

Kumu Hula Carole Lanialoha Lee was born and raised in Chicago and is curator of Chicago's Legacy Hula, a new exhibition in the Regenstein Halls of the Pacific.

"This is my story about Hula," she said. "It was a journey that began for me at an early age, in 1967 Chicago. Guided by Grandma, Caroline Namahoe Ka`a`a, and soon after followed by three Kumu Hula that would shape my entire future when it concerned Hula. They were key community leaders and contributors to Native Hawaiian and Hula communities in the Chicago-Midwest region. But during research for this exhibition, this story about Hula grew into something even bigger."

Kānaka Maoli (Native Hawaiians) have our own ways of recording history and storytelling. Hula is one of them. Through movement, Hula is a spiritual expression that manifests the goddess Laka. With mele (text/song) it becomes a record of historical accounts. Hula, a physical practice, is demanding, rigorous, and requires dedication to achieve excellence. Our ancestors brought Hula to Chicago, where we have perpetuated, preserved, and protected it for generations.

Lanialoha grew up seeing the Hawaiian collections at the Field, but was stunned to learn that the Museum cares for 35 kāhili, the sacred royal standards of the Hawaiian Ali`i (royalty and chiefly families) that embody their mana (divine power). The kāhili were donated to the museum in 1949 by a Chicagoan named Kulamanu Nash. Further research revealed that Kulamanu's great-grandmother was the Ali`i wahine (Chiefess) Kamakana, a descendant of the highest chiefly families of Maui, Hawai`i, and O`ahu Islands. In 1878, Kamakana's granddaughter, Lucy Hannah Robinson of Honolulu, married an American pharmacist named Albert McWayne, who had immigrated to the Kingdom of Hawai`i from Geneva, Illinois. Their family history is inseparable from the history of Hawai`i.

In 1914, Lucy established a home in Rogers Park, on the north side of Chicago. Kulamanu joined her in 1919, and lived here permanently. Lucy passed away at the family's waterfront residence at Ka`alawai, O`ahu in 1943, and her obituary remembers her as generous in her support of charities, in Hawai`i and Chicago. Six years after Lucy's death, Kulamanu gifted the kāhili to the Field Museum.

Four of the kāhili will be on display in Chicago's Legacy Hula, which begins to tell the story of Kānaka Maoli's arrival to Chicago.

"To the many Native Hawaiians who followed our Princess Kulamanu to Chicago, this story offers a kind of confirmation that we in the Midwest are all descendants of Ali`i," Kumu Hula Carole Lanialoha Lee says. "That's something Kānaka Maoli can take great pride in."

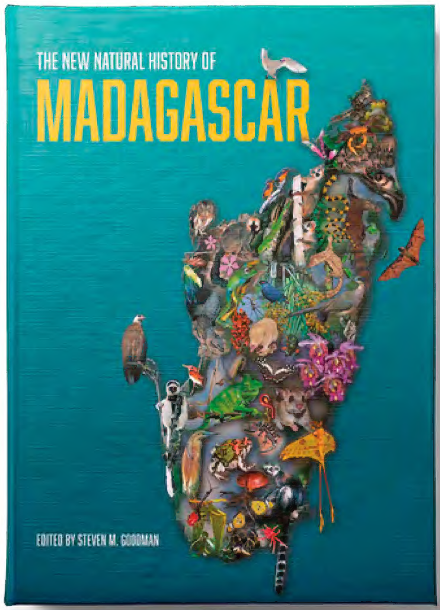
(Right) Hula is passed from Kumu Hula (Master Teacher) to haumana (student)

"These are my Kumu and Kumu Hula, who realized it would require the sum of each person to plot a new Hula path in the Midwest. In Hawai`i the traditional path begins at childhood, and there are distinct Hula genealogies, just like a family tree. These Kumu created a Chicago Hula lineage. Only now do I realize how lucky I am to walk that path." –Kumu Hula Carole Lanialoha Lee

[Top to bottom] Caroline Namahoe Ka`a`a, Bill Ka`ulu Charman, Pat Kanaha Yamanuha, Edward Princeton Kalahiki

LYNNE NASH SEEKAMP AND PAMELA GARWOOD

(Left) Kulamanu Beatrice McWayne (left) moved to Chicago in 1919 and married L. Byron Nash of Eau Claire in 1920, whom she met at church. Her family line continued here for two more generations. Wayne Kulamanu Nash (right) was born in Rogers Park in 1924 and graduated from Highland Park High School.



(Above) The New Natural History of Madagascar *by Steve Goodman and colleagues is now on sale at the Field Museum Store or online at store.fieldmuseum.org.*

(Left) The critically endangered Verreaux's Sifaka is one of the 109 species of lemurs that currently are extant on Madagascar. A total of 17 species of lemurs have already gone extinct.

CHIEN C. LEE

NOW OR NEVER FOR MADAGASCAR

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS; AND **RACHEL WEGNER,** INSTITUTIONAL ADVANCEMENT

In many ways, Madagascar is a biologist's dream: a real-life experiment in how isolation sparks evolution. Madagascar is home to a wealth of habitats—from rainforests to desert lowlands—and its remoteness has allowed its ecosystems to evolve entirely separate from the rest of the world. On an island roughly the size of France, there are 219 known mammal species, 90% of which are found nowhere else on Earth. However, due to habitat loss, over-hunting, and climate change, more than 120 of these species are endangered. A new study estimates that if these species were to go extinct, it would take 23 million years for a similarly complex set to evolve—far longer than has been hypothesized for any other island.

The research team compiled a dataset of Madagascan mammal species that would have interacted with humans—the 219 still alive today, plus 30 more that went extinct in the past two millennia. Armed with this data, the researchers built genetic family trees to establish how all these species are related to each other and how long it took them to evolve from their various common ancestors. These branches are diverse in a way that is unique to Madagascar's isolated ecosystems, as Steve Goodman, PhD, co-author of the study and MacArthur Field Biologist at the Field Museum, notes in his book *The New Natural History of Madagascar*. Using the data of this extensive biodiversity, the scientists were able to extrapolate how long it took to evolve, and estimate how long it would take for evolution to "replace" all of the endangered mammals if they go extinct. Their findings were alarming: "if immediate action isn't taken, Madagascar is going to lose 23 million years of evolutionary history of mammals, which means whole lineages...will never exist again," Goodman said.

Goodman emphasized the need for a swift response, saying that there is about a five-year window to seriously increase conservation efforts in Madagascar before the damage is irreversible. But just as human activity was key to accelerating these species' endangerment, this urgent work is made difficult by inequality and political corruption that keeps land-use decisions out of the hands of most Malagasy people. "Madagascar's biological crisis has nothing to do with biology. It has to do with socio-economics." Goodman said. And while the situation is dire and difficult to navigate, "we can't throw in the towel. We're obliged to advance this cause as much as we can and try to make the world understand that it's now or never."

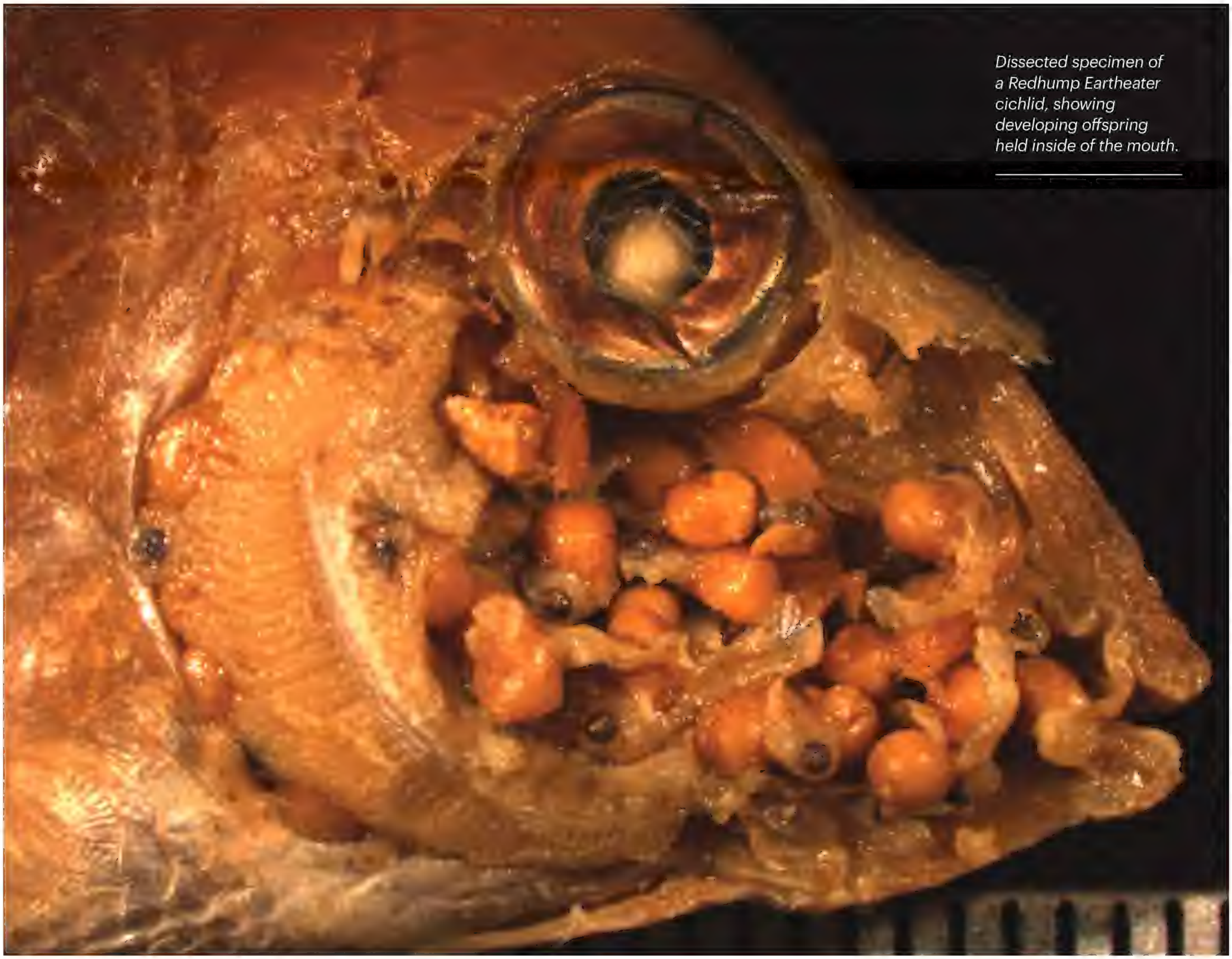
HOW DO MOUTH-BROODING FISH EAT?

BY CALEB MCMAHAN, PHD, HEAD OF ZOOLOGY COLLECTIONS, GANTZ FAMILY COLLECTIONS CENTER

Cichlids are a family of fishes that are often used as examples of evolutionary diversification. With over 1600 species, cichlids possess fascinating morphologies and behaviors, including multifunctionality. This type of adaptation is sometimes considered an evolutionary limitation; however, it is present in a variety of different traits and organisms.

One such trait is mouthbrooding, a kind of parental care where offspring develop inside a parent's mouth. This adds a major function, (in this case reproduction) to a structure already used for the critically vital functions of feeding and respirating. When it comes to fishes, there is evidence that this intriguing behavior has evolved repeatedly from other forms of parental care in at least seven different families. I worked with a team of researchers to test the hypothesis that mouthbrooding is more likely to evolve in groups with feeding adaptations that are already advantageous for that function.

We set out to test this in Neotropical cichlids. The study, published in *The American Naturalist*, was led by Hannah Weller, a PhD candidate at Brown University, who also worked with me on her undergraduate thesis. Based on evolutionary relationships of cichlids, we found that mouthbrooding has evolved multiple times across Neotropical cichlids. This allows us to make interesting comparisons between closely related "sister lineages" of mouthbrooding cichlids and substrate-brooding cichlids (those that lay their eggs on a surface). We analyzed the mouth and oral cavity of numerous species of Neotropical cichlids using CT scans and detailed dissections of specimens and found a strong relationship between mouthbrooding and winnowing, an interesting foraging strategy in which sediment is sifted for food in the mouth. Using Neotropical cichlid radiations as a model, our study explores how increasing constraints in one trait may actually release them for another, generating new evolutionary opportunities.



Dissected specimen of a Redhump Eartheater cichlid, showing developing offspring held inside of the mouth.

HANNAH WELLER

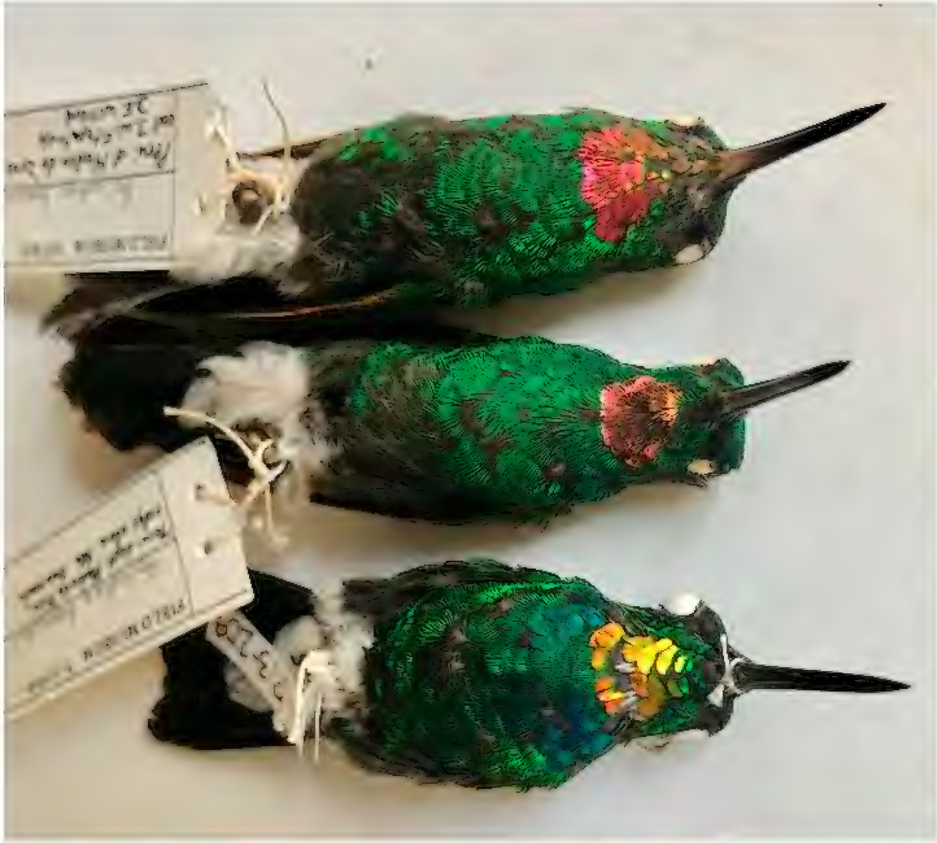
PINK PLUS PINK EQUALS GOLD?

BY JOHN BATES, PHD, CURATOR OF BIRDS; **CHAD ELIASON, PHD,** SENIOR RESEARCH SCIENTIST; AND **SHANNON HACKETT, PHD,** RICHARD AND JILL CHAIFETZ ASSOCIATE CURATOR OF BIRDS; NEGAUNEE INTEGRATIVE RESEARCH CENTER

Research, now more than ever, is a collaborative effort, and a paper we just published with colleagues from several other institutions highlights this well. It focuses on a distinctive-looking hummingbird collected on a 2013 Field Museum expedition in Cordillera Azul National Park in Peru. The bird differed from the Rufous-webbed Brilliant (*Heliodoxa branickii*), a species known to occur in the park, by having a golden, rather than a pink, throat or gorget, and we thought it might be a new species. Shannon Hackett and the team sequenced the mysterious gold-throated hummingbird's DNA in the Museum Pritzker Laboratory for Molecular Systematics and Evolution and discovered that it was actually a hybrid specimen between the Rufous-webbed and Pink-throated Brilliant (*Heliodoxa gularis*)—a member of the same genus that occurs just to the north. Knowing the bird was a hybrid shifted the research to trying to figure out how the gold throat became expressed rather than the pink throat that both parents possess.

Jacob Cooper, a University of Chicago birds resident graduate student, created niche models of the geographic ranges for the two parent species to document potential overlap in the region. Eliason and co-author Mark Hauber (University of Illinois, Champaign-Urbana) studied gorget feathers using an electron microscope to visualize the structure of melanosomes inside the feathers. Melanosomes are the structures inside cells that are responsible for the amazing iridescent colors of some birds. The gorget feathers of the golden-throated bird had a distinctive melanosome structure compared to those of the two parent Brilliant species, which may explain the differing color.

Color variation like this is highly unusual within hummingbird species, and this individual likely illustrates a mechanism by which novel plumage characteristics can be produced that then may spread across populations, eventually leading to the creation of a new species. The hummingbird family has over 300 species, 50% of which have iridescent gorgets. This novel method of color production could help explain the high species diversity and incredible plumage colors and patterns in this amazing family of birds.



JOHN BATES

JOHN BATES

(Top) Specimens of Pink-throated Brilliant (top), the Cordillera Azul specimen (middle) and Rufous-webbed Brilliant (bottom) showing the variation in throat coloration.

(Above) 2013 Field Camp on the edge of Cordillera Azul National Park.

JOCHEN STIERBERGER

JOCHEN STIERBERGER

(Left) Jingmai (right) with her family at home in Pasadena, CA in early 2020.

(Below) Having fun in the CRC VP oversize collections—these are bones from the largest dinosaurs while Jingmai works with the smallest.

MEET THE NEW FACES OF SCIENCE

BY CECILIA ACKERMAN, EXHIBITION DEVELOPER; **LAUREN BOEGEN,** EXHIBITIONS PROJECT MANAGER; WITH **JINGMAI O'CONNOR, PHD,** ASSOCIATE CURATOR OF FOSSIL REPTILES, NEGAUNEE INTEGRATIVE RESEARCH CENTER

The Changing Face of Science is an exhibition and program series featuring the work of six different Field Museum scientists from diverse backgrounds in a range of disciplines. The series aims to shift the self-perceived ability for women and people of color to pursue science. The exhibition first opened in August 2022 featuring Lynika Strozier. This August, it will reopen with a new feature on Jingmai O'Connor, PhD, Associate Curator of Fossil Reptiles.

When Jingmai's mother decided to go back to school and pursue a PhD in geology, ten-year-old Jingmai embarked on a path that would transform her interests from art to science. Today she specializes in the early evolution of birds and other flying dinosaurs, which led her to Beijing for 10 years to work on exceptionally well-preserved Early Cretaceous birds and feathered dinosaurs from northeastern China. She participates in field work around the world, leading her own expeditions in Hell Creek (where SUE was found), and specializes in synthesizing data and storytelling within the field.

Besides being one of the world's foremost experts on Mesozoic birds, Jingmai is also known as "the punk rock paleontologist" and "paleontology's wild child." She loves fashion, dancing, tattoos, Buddhist philosophy, and music. She named a Cretaceous bird, *Qiliania graffini*, in honor of Greg Graffin, PhD, the lead singer of the punk band Bad Religion (who is a paleontologist himself). Open about her own mental health challenges and struggles in academia, she mentors students on how to forge career paths, focusing on the importance of being true to one's innate character as the path to success.

Paleontology can tell us much about how to navigate the current environmental crisis: Earth's 6th mass extinction. Jingmai is a strong advocate for sustainability and challenging consumer culture to protect our planet's future. She minimizes the use of single-use plastics and fossil fuels in her daily life, and encourages everyone to live sustainably. She also recently authored *When Dinosaurs Conquered the Skies*, a book inspiring children's interest in paleontology and its connection with our planet's future.

The Changing Face of Science: Jingmai O'Connor **will open on August 4, 2023 in the Daniel F. and Ada L. Rice Gallery and is made possible in part by the Institute of Museum and Library Services.**

HOW DID SPINOSAURUS HUNT?

By Kate Golembiewski
PUBLIC RELATIONS
Rachel Wegner
INSTITUTIONAL ADVANCEMENT

This June, the Field Museum will become the only place in the Western hemisphere to have the world's largest predatory dinosaur. A *Spinosaurus* cast will be suspended from the ceiling of Stanley Field Hall in a swimming pose to evoke its reign as a prehistoric river monster.

Spinosaurus is the biggest carnivorous dinosaur ever discovered—even bigger than *T. rex*—but the way it hunted has been a subject of debate for decades.

It's hard to guess the behavior of an animal that we only know from fossils. Some scientists have proposed that *Spinosaurus* could swim, but others believe that it just waded in the water like a heron. A group of paleontologists published a study in *Nature* that takes a different approach: examining the density of the bones. By analyzing the density of spinosaurid bones and comparing them to other animals, the team found that *Spinosaurus* had dense bones that likely would have allowed it to submerge itself underwater to hunt.

"The fossil record is tricky...we don't have any complete skeletons for these dinosaurs," says Matteo Fabbri, a postdoctoral researcher at the Field Museum and the lead author of the study. "Other studies have focused on interpretation of anatomy. But, clearly if there are such opposite interpretations regarding the same bones, it is a clear signal that those are not the best proxies for us to infer the ecology of extinct animals."

DIEGO MATTARELLI DAVIDE BONA

(Left) Life-reconstruction of Spinosaurus *hunting the fish onchopristis in the Kem Kem bed river system in North Africa.*

(Above) Matteo Fabbri digging skull remains of the Spinosaurus *neotype, Kem Kem, Morocco.*

This back-and-forth brought the researchers to another method. “The idea for our study was, okay, clearly we can interpret the fossil data in different ways. But what about the general physical laws?” says Fabbri. “There are certain laws that are applicable to any organism on this planet. One of these laws regards density and the capability of submerging into water.” Across the animal kingdom, bone density is a “tell” in terms of whether that animal is able to sink beneath the surface and swim; dense bone works as buoyancy control and allows the animal to submerge itself.

Fabbri and his colleagues put together a dataset of bone cross-sections from 250 species of extinct and living animals, both land-dwellers and water-dwellers, looking for a diverse cast of samples. The researchers compared these to cross-sections of bone from *Spinosaurus*. Essentially, the team had to show a proof of concept among animals that are still alive that we know for sure are aquatic or not, and then applied them to extinct animals that we can’t observe. What they found, says Fabbri, was “…a very strong correlation, and the best explanatory model that we found was in the correlation between bone density and sub-aqueous foraging.” From this, the researchers were able to infer that *Spinosaurus* likely hunted submerged in water, even without complete fossil specimens.

By analyzing the density of spinosaurid bones and comparing them to other animals, the team found that *Spinosaurus* had dense bones that likely would have allowed it to submerge itself underwater to hunt.

(Left) South Rupununi Conservation Society (SRCS) Award recipients (left to right): Leroy Ignacio, Alyssa Melville, Maya de Freitas, Kim Spencer, and Justin de Freitas.

(Below) Secondary school students in the Rupununi gather for the educational program led by the South Rupununi Conservation Society (SRCS), winner of the 2023 Field Museum Parker/Gentry Award.

KYLE FLUBACKER PHOTOGRAPHY

SOUTH RUPUNUNI CONSERVATION SOCIETY

2023 PARKER/GENTRY AWARD: SOUTH RUPUNUNI CONSERVATION SOCIETY

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS, AND **RACHEL WEGNER,** INSTITUTIONAL ADVANCEMENT

The Field Museum's 2023 Parker/Gentry Award was given to the South Rupununi Conservation Society (SRCS) in April. SRCS is an organization that focuses on environmental and wildlife conservation and community engagement in the megadiverse South American country of Guyana.

Every year since 1996, the Museum has celebrated an outstanding individual or group in the field of environmental conservation, with the award named for the late conservationists Theodore A. Parker III and Alwyn Gentry. Past awardees have made remarkable contributions to conservation of a diverse range of ecosystems and communities in more than a dozen countries around the world.

The South Rupununi Conservation Society (SRCS) banner includes images of Red Siskin (Spinus cucullatus)*, Giant Anteater* (Myrmecophaga tridactyla)*, and Yellow-spotted River Turtles* (Podocnemis unifilis)

Originally founded in 1998 by a group of friends eager to reverse the decline of certain species native to the area, SRCS's work is firmly rooted in the forests, savannas, and wetlands of Guyana's Rupununi. This globally-celebrated biodiversity hotspot is home to a large number of Indigenous communities, many of which lend their expertise to the Society's conservation goals. SRCS projects include population studies of globally threatened birds such as the endangered Red Siskin (*Spinus cucullatus*), vulnerable Giant Anteater (*Myrmecophaga tridactyla*), environmental education and traditional knowledge programs in Indigenous communities, habitat conservation, and work to restore populations of globally vulnerable Yellow-spotted River Turtles (*Podocnemis unifilis*).

Leroy Ignacio, the current president of SRCS, is grateful to see conservation become a collaborative effort among experts. "It is an honor for SRCS, the people of Rupununi, our friends around the world, and Guyana to receive this prestigious award from the Field Museum," Ignacio says. "In our experience, collaboration between local experts, the scientific community, and national entities provides a model that promotes local efforts to produce tangible conservation impacts. Thanks to the Field Museum for acknowledging our local efforts at this critical time of global pressure on natural resources and traditional livelihoods."

"The Guyanese government is making a major push to safeguard the country's biodiversity," says Lesley de Souza, PhD, Lead Conservation Ecologist and chair of the award selection committee at the Field Museum. "It's a real honor to support that mission by recognizing one of the country's most inspiring and effective local conservation groups."

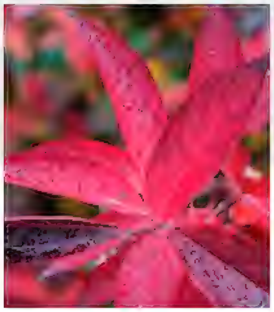
Take me out and explore!

Field Museum, Chicago, Illinois, USA

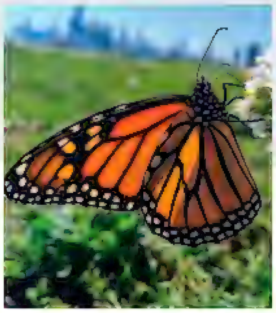
Colors in the Rice Native Gardens

Laura Milkert
Field Museum

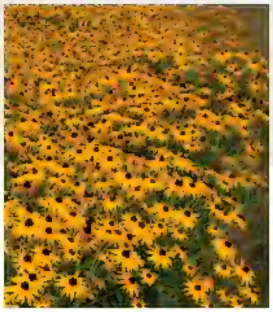
The Field Museum invites you to awaken your senses as you venture through the Rice Native Gardens and experience the beautiful colors of the natural world. The Rice Native Gardens highlight plants native to Northeast Illinois and have become an urban haven for people, butterflies, bees, wasps, birds, and other animals. To learn more, visit **shorturl.at/djuvH.**



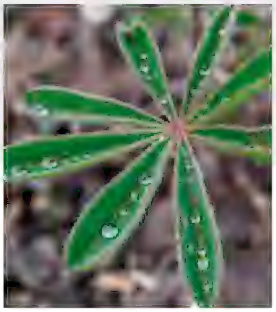
1 Red-osier dogwood *Cornus sericea*



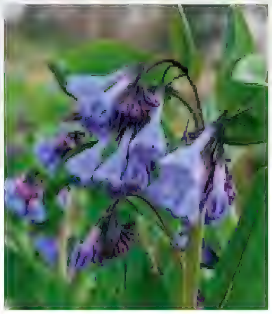
2 **Monarch butterfly** *Danaus plexippus*



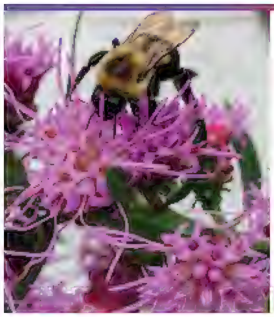
3 Black eyed susan *Rudbeckia fulgida*



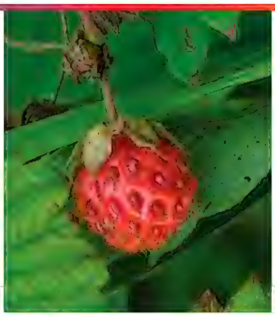
4 Blue lupine *Lupinus perennis*



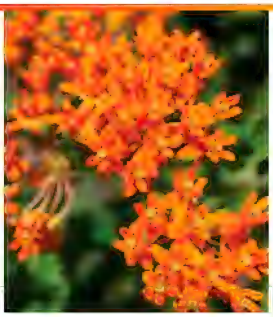
5 Virginia bluebells *Mertensia virginica*



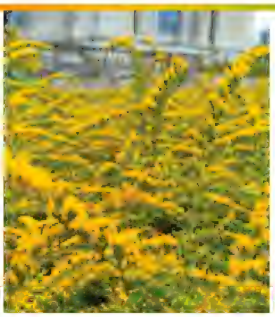
6 Rough Blazing Star *Liatris aspera*



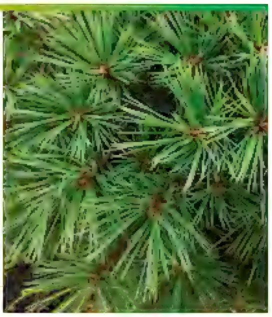
7 Wild strawberry *Fragaria virginiana*



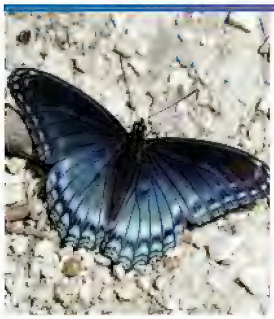
8 **Butterfly weed** *Asclepias tuberosa*



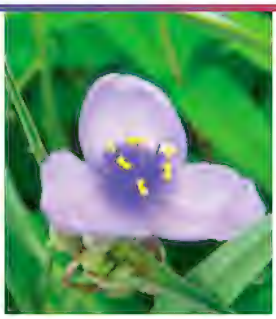
9 Fireworks goldenrod *Solidago rugosa ‘Fireworks’*



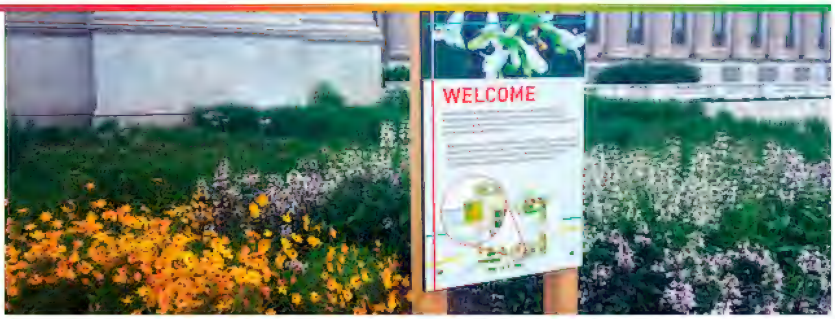
10 Dwarf eastern white pine *Pinus strobus ‘blue shag’*



11 Red-spotted purple *Limenitis arthemis astyanax*



12 Spiderwort *Tradescantia ohiensis*



The Rice Native Gardens, The FIeld Museum, Chicago, Illinois

Land Acknowledement: The Field Museum acknowledges that it was built on the traditional homelands of the Bodéwadmik (Potawatomi), Hoocąk (Winnebago/Ho’Chunk), Jiwere (Otoe), Nutachi(Missouria), and Baxoje (Iowas); Kiash Matchitiwuk (Menominee); Meshkwahkîha (Meskwaki); Asâkîwaki (Sauk); Myaamiaki (Miami), Waayaahtanwaki (Wea), and Peeyankihšiaki (Piankashaw); Kiikaapoi (Kickapoo); Inoka (Illini Confederacy); Anishinaabeg (Ojibwe), and Odawak (Odawa). The Museum recognizes that the region we now call Chicago was the traditional homelands of many Indigenous nations, and remains home to diverse Native people today. The land we walk was and remains Native land. | Photos: Laura Milkert, J&J Balaban, and John Weinstein. Produced by Alicia Diaz [adiaz@fieldmuseum.org].

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[fieldguides.fieldmuseum.org] **[1302]** version **1** 4/2023

Between There and Here

Tiktaalik, a transitional organism that reveals how some aquatic animals evolved into land-dwelling tetrapods–the four-limbed vertebrates that include dinosaurs, reptiles, and humans. Meet another point on that trajectory, *Diadectes*. This fossil specimen is an early example of a tetrapod and its jaw reveals that it was one of the first plant-eating tetrapods, giving us clues to how animals evolved to live on land. This fossil represents one of the first organisms with common characteristics to dinosaurs and other land-dwelling organisms we recognize today. **On your next visit to the Field Museum meet *Diadectes* in *Griffin Halls of Evolving Planet* and discover how species like *Tiktaalik* led to SUE and even humans!**

Latinx Heritage Month

September 15 – October 15

Ballet Folklorico de Chicago performing in Stanley Field Hall

Join the Field Museum in celebrating Latinx Heritage Month!

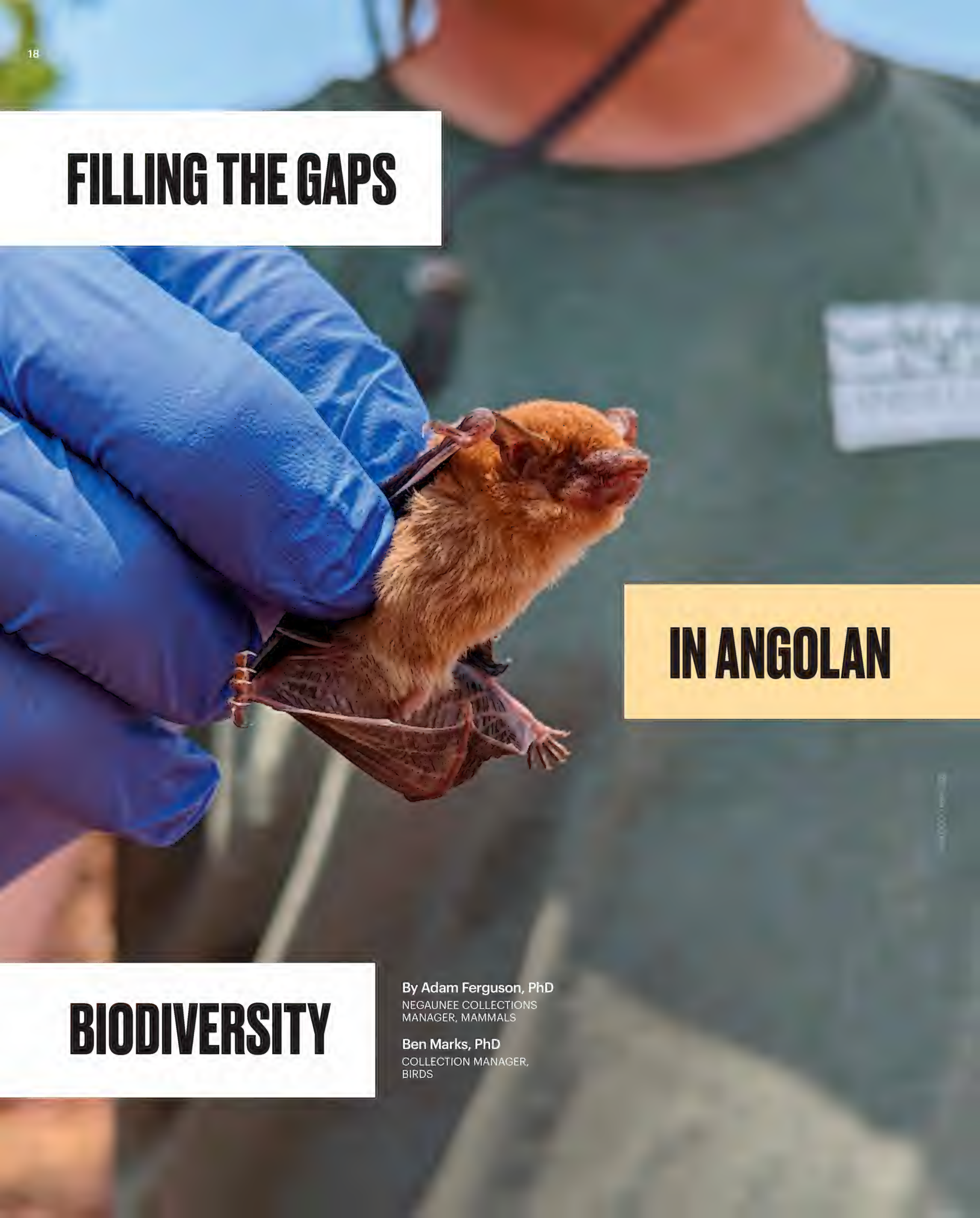
September 15 – October 15

Through our collections, we're highlighting the rich tapestry of our culture and traditions. *Todos son bienvenidos*—all are welcome!

Keep a lookout for your Member e-newsletter for Latinx Heritage Month information!

Throughout the month, members can enjoy live performances representing different traditions in Latin America and a series of lectures highlighting the Museum's work with Latinx communities. In the *Grainger Science Hub*, learn about the work our scientists and conservation ecologists are doing with Latinx communities, rapid inventories in Latin America, and see items from the museum's collections from these regions.

"We're excited to share the extraordinary work of our Field Museum staff from the collaborative work with Latinx communities here in Chicago and abroad, to the critical work they're doing in Latin America, helping preserve valuable ecosystems for future generations," said Vicky Sanchez, Annual Fund and Membership Director and one of the organizers of the Field's Latinx Heritage Month efforts.



FILLING THE GAPS IN ANGOLAN BIODIVERSITY

By Adam Ferguson, PhD
NEGAUNEE COLLECTIONS MANAGER, MAMMALS

Ben Marks, PhD
COLLECTION MANAGER, BIRDS

ARTHUR TIUTENKO

> ...the Serra da Neve represents an isolated mountain...that is thought to have been separated from the nearest woodland habitats for over 1 million years.

IN OCTOBER 2022, our Field Museum team, along with our colleague Daryl Coldren, collections assistant (birds), set off for a second trip to Angola. Funded through the National Geographic Society and the Field Museum's Fieldwork Fund, we joined colleagues from Angola's National Institute of Biodiversity Conservation (INBAC) to survey the remote Serra da Neve ("Mountain of Snow") for mammals, birds, and reptiles & amphibians.

Expedition leader Luis Ceríaco, PhD, partnered with longtime collaborator Varito Baptista to help us ascend the remote and nearly inaccessible Serra da Neve. Rising from the scorching Namibe Desert, the Serra da Neve represents an isolated mountain of the miombo woodlands that is thought to have been separated from the nearest woodland habitats for over 1 million years. Given this isolation, and the lack of scientific inventories, we were hopeful that our work would help fill a knowledge gap of Angolan fauna and yield new species discoveries.

This trip did not disappoint! Despite the 4.5 hours it took to drive the 17 km road up to our base camp at 1600 meters above sea level and a bout with COVID for Ferguson, the trip yielded hundreds of specimens for the museum's collection. Preliminary DNA sequencing has already indicated the presence of undescribed diversity or unique lineages of more broadly distributed species, as well as a novel Alpha-coronavirus recovered from a pipistrelle bat (*Pipistrellus cf. grandidieri)*. This work represents just the beginning for aspirations to study Angola's little-understood vertebrate diversity, with plans for future expeditions focused on training the next generation of Angolan and Field Museum scientists in field-based surveys to document the diversity of life, including the pathogens that often threaten such life.

(Opposite) New species of vesper bat Pipistrellus cf. grandidieri *being described with FMNH and Eswatini colleagues.*

(Above) Base camp for field activities and the team after a long day of prepping at the base of the Serra da Neve.

CHEMISTRY REVEALS UNTOLD HISTORIES OF INDIGENOUS ANDEAN PEOPLES

BY BETH GRÁVALOS, PHD, POSTDOCTORAL SCIENTIST; AND **RYAN WILLIAMS, PHD,** CURATOR OF ARCHAEOLOGICAL SCIENCE; NEGAUNEE INTEGRATIVE RESEARCH CENTER

The Field Museum's scientific facilities and anthropological collections offer us the chance to study lesser-known histories and to work with our colleagues worldwide to craft inclusive stories about our shared human past. A recent special issue in the *Journal of Archaeological Science: Reports* did just this, with its focus on understanding the politics and economics of ceramic goods among pre-Hispanic Indigenous societies in Andean South America.

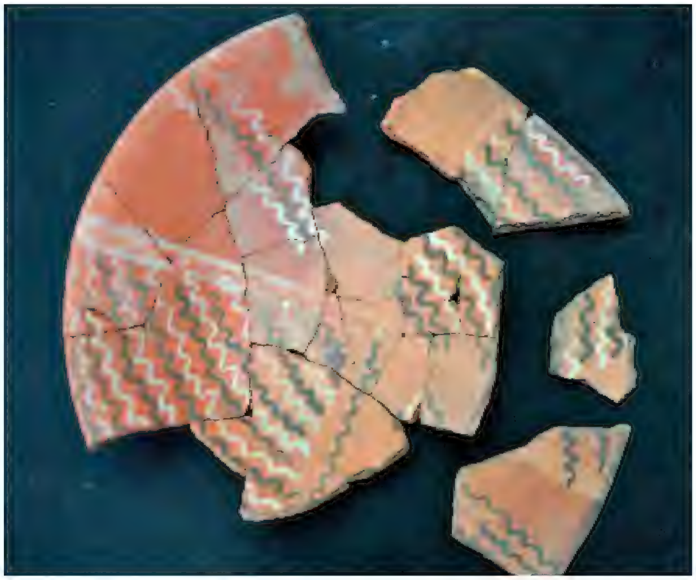
The previously untold stories published in *Collaborative Analyses of Elemental Data: A Special Issue on Andean Ceramics and Ancient Political Networks* describe the social, political, and economic relationships of diverse Andean cultures, spanning approximately two millennia of Indigenous history.

To write these histories, our collaborators examined the raw materials used by ancient Andean peoples to craft pottery. These data were generated in the Field Museum's Elemental Analysis Facility using an inductively coupled plasma mass spectrometer (ICP-MS) with a laser attachment to characterize the chemical composition of archaeological artifacts. We compare the chemical signatures of the raw materials in ceramic artifacts to understand if distinct communities utilized similar resources and participated in networks of exchange.

Several of the studies in our special issue reveal the social and economic ingenuity of diverse Andean communities. For example, publications included explorations of ceramic-making dynamics and exchange among Peru's great empires, the Inka (1450-1532 AD) and the Wari (600-1000 AD) as well as the Tiwanaku people of Bolivia. In each study, researchers found that innovations in ceramic technology were catalyzed by the interactions between local potters had with foreign goods and ideas, inspiring them to incorporate new designs while continuing to utilize traditional production techniques. For the Tiwanaku, large demographic movements were accompanied by greater interregional exchange than the Inka and Wari. However, the same local production was the norm for these communities, indicating that even in cosmopolitan times, local manufacture is a resilient strategy.

Another paper on more recent Andean history examined whether Indigenous laborers who lived in Peru during the 16th-19th centuries had access to 'majolica', a widely traded glaze ware found across the Spanish colonial empire. Their study demonstrates that laborers accessed these glaze wares from multiple sources, indicating that Indigenous communities actively structured the economic exchange and distribution networks so critical to the Spanish.

Taken together, these papers highlight the creativity and resourcefulness of local communities to adapt to wider economic and political transformations, lessons that are important in the increasingly globalized economy of today. Moreover, they shed light on the Indigenous histories that are only accessible through archaeology.



(Left) A Middle Horizon (600-1000 CE) plate from the site of Hualcayán (Ancash, Peru). Ancient potters were likely inspired by foreign Wari design motifs, as shown by the painted designs. But elemental analysis revealed the plate was made with local raw materials.

BETH GRAVALOS

(Above) View of the Cordillera Blanca mountain range in Ancash, Peru while on survey for raw clay samples to compare with ancient pottery.

BETH GRAVALOS

Ants became ubiquitous parts of their ecosystems by playing a key role in dispersing seeds.

MATTHEW NELSEN

HOW ANTS TOOK OVER THE WORLD

BY KATE GOLEMBIEWSKI, PUBLIC RELATIONS; AND **CHANDLER COHRON,** INSTITUTIONAL ADVANCEMENT

More than 14,000 different species of ants are spread over every continent, except Antarctica, and researchers have estimated that there are more than twenty quadrillion individual ants on Earth. But how ants evolved to take over the world is still a mystery. In a new study in the journal *Evolution Letters*, scientists used a combination of fossils, DNA, and data on the habitat preferences of modern species to piece together how ants and plants have been evolving together over the past 60 million years.

Scientists already know that ants and flowering plants both originated around 140 million years ago and subsequently became more prevalent and spread to new habitats. Lead author Matthew Nelsen, PhD, a Research Scientist in the Negaunee Integrative Research Center, and his colleagues wanted to find evidence that the two groups' evolutionary paths were linked. They compared the climates, including temperature and precipitation, inhabited by 1,400 modern ant species and coupled this information with a time-scaled reconstruction of the ant family tree. Many ant behaviors, like where they build their nests and what habitats they live in, appear to be deeply ingrained in their species' lineages, to the point that scientists are able to make inferences about prehistoric ants' lives based on their modern relatives.

About 60 million years ago, ants lived primarily in forests and built their nests underground. "Around this time, some of the plants in these forests evolved to exhale more water vapor out through tiny holes in their leaves...contributing to the evolution of [the] rainforest," said Nelsen. In this wetter environment, some of the ants began moving their nests up into the trees.

Some of the flowering plants living in these forests began to spread outward, inching their way into more arid regions and adapting to thrive in drier conditions. Nelsen and his colleagues' work suggests that when flowering plants left the forests, some of the ants followed. "Other scientists have shown that plants in these arid habitats were evolving ways of making food for ants—including things like elaiosomes, which are like fleshy appendages on the seeds," said Nelsen. And when ants take the seeds to get the elaiosomes, they help disperse them: a win for the parent plants.

"This study shows the important role that plants play in shaping ecosystems," said Nelsen. "Shifts in plant communities—such as those we are seeing as a consequence of historic and modern climate change—can impact the animals and other organisms relying on them."

17-POUND METEORITE FOUND IN ANTARCTICA

BY MARIA VALDES, PHD, RESEARCH SCIENTIST, ROBERT A. PRITZKER CENTER FOR METEORITICS AND POLAR STUDIES, NEGAUNEE INTEGRATIVE RESEARCH CENTER

I was recently part of an international team of scientists who spent a month in Antarctica collecting meteorites. We began our journey in Cape Town, South Africa, going over safety procedures and picking out polar equipment to borrow from the International Polar Foundation. We visited the Cape of Good Hope and Boulders Beach, home to one of only a few African penguin colonies. Then, we flew to the Belgian Princess Elisabeth station, located about 120 miles inland on the northeast coast of East Antarctica.

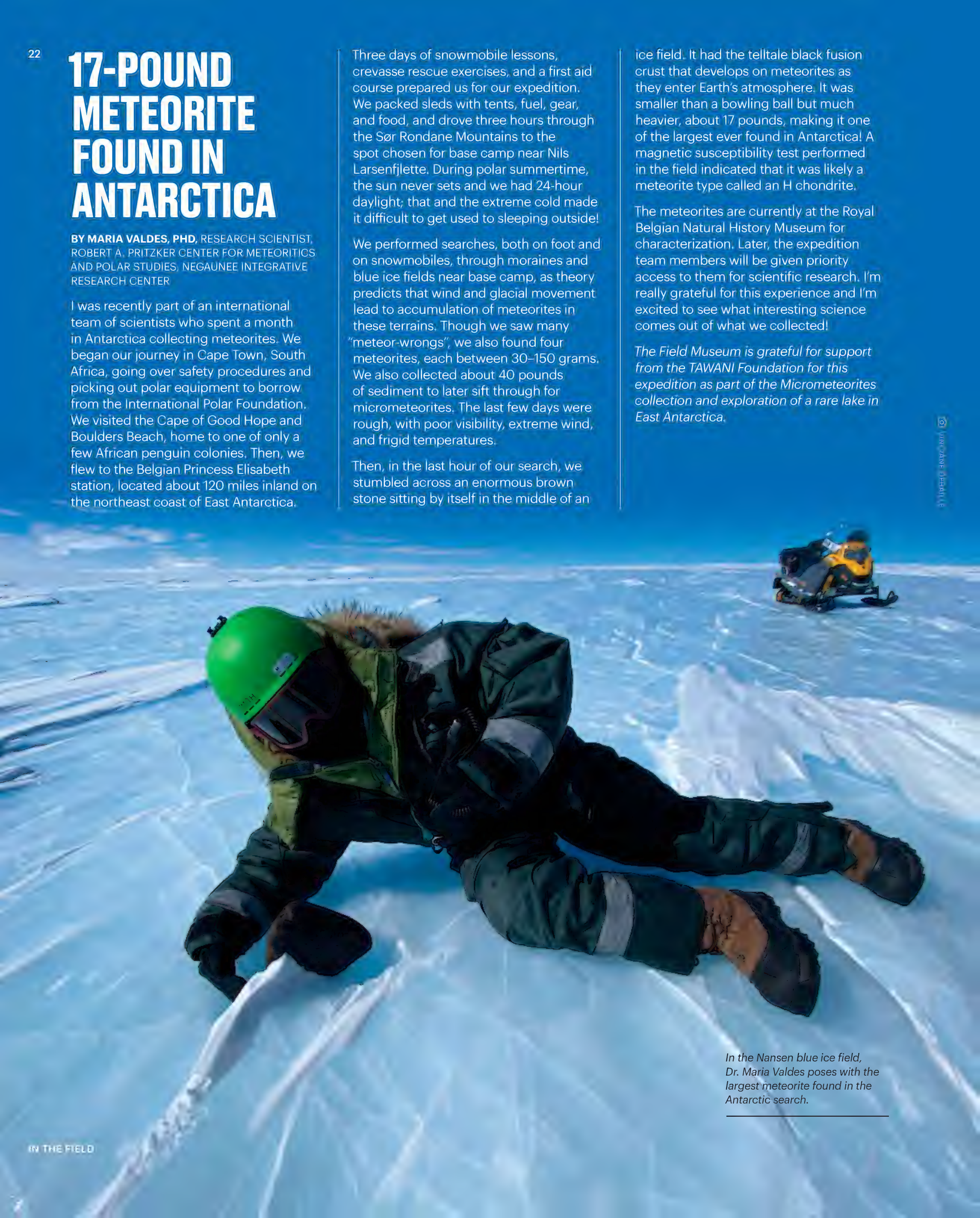
Three days of snowmobile lessons, crevasse rescue exercises, and a first aid course prepared us for our expedition. We packed sleds with tents, fuel, gear, and food, and drove three hours through the Sør Rondane Mountains to the spot chosen for base camp near Nils Larsenfjlette. During polar summertime, the sun never sets and we had 24-hour daylight; that and the extreme cold made it difficult to get used to sleeping outside!

We performed searches, both on foot and on snowmobiles, through moraines and blue ice fields near base camp, as theory predicts that wind and glacial movement lead to accumulation of meteorites in these terrains. Though we saw many "meteor-wrongs", we also found four meteorites, each between 30–150 grams. We also collected about 40 pounds of sediment to later sift through for micrometeorites. The last few days were rough, with poor visibility, extreme wind, and frigid temperatures.

Then, in the last hour of our search, we stumbled across an enormous brown stone sitting by itself in the middle of an ice field. It had the telltale black fusion crust that develops on meteorites as they enter Earth's atmosphere. It was smaller than a bowling ball but much heavier, about 17 pounds, making it one of the largest ever found in Antarctica! A magnetic susceptibility test performed in the field indicated that it was likely a meteorite type called an H chondrite.

The meteorites are currently at the Royal Belgian Natural History Museum for characterization. Later, the expedition team members will be given priority access to them for scientific research. I'm really grateful for this experience and I'm excited to see what interesting science comes out of what we collected!

The Field Museum is grateful for support from the TAWANI Foundation for this expedition as part of the Micrometeorites collection and exploration of a rare lake in East Antarctica.



In the Nansen blue ice field, Dr. Maria Valdes poses with the largest meteorite found in the Antarctic search.

© VINCIANE DEBAILLE

A SOFT-FURRED HEDGEHOG?

BY LAWRENCE HEANEY, PHD, NEGAUNEE CURATOR OF MAMMALS, NEGAUNEE INTEGRATIVE RESEARCH CENTER

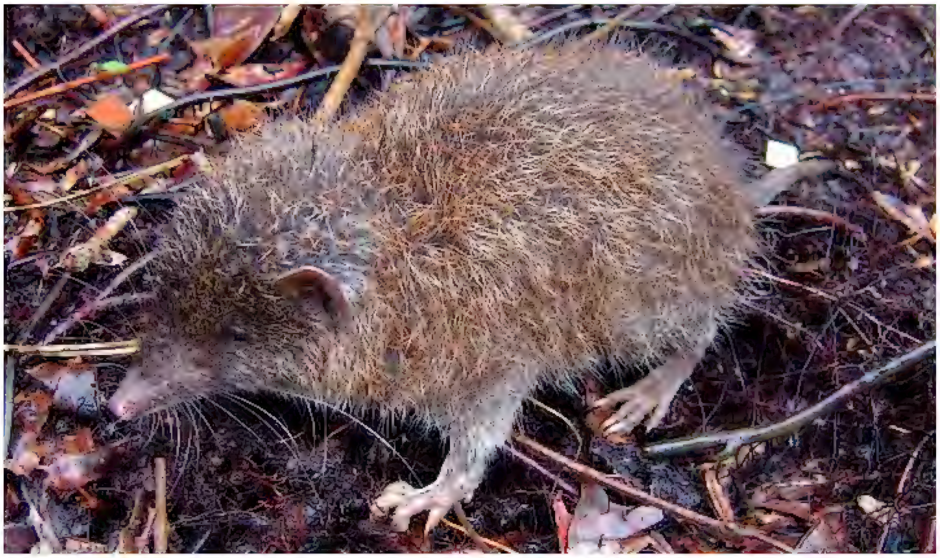
The idea of a "soft-furred" hedgehog seems counterintuitive as the signature feature of hedgehogs is their covering of sharp quills. But Southeast Asia has around 10 species of hedgehog with soft fur, and that number just increased by one, thanks to a new paper in the journal *Zootaxa* that I co-authored with colleagues from the Philippines and the US.

The late Danny Balete (a renowned Filipino zoologist and Field Museum Research Associate) had the manuscript partially completed before his death in 2017. Over the past year, the Field Museum's Philippine Mammal Team brought the project to completion. The paper describes the species *Podogymnura intermedia*, which is recognized as the fourth Philippine species in this unusual group, and the second species of mammal that only lives on the "sky islands" in southeastern Mindanao.

This part of the Philippines had been largely unexplored by biologists until the 2010s, when Danny, in collaboration with the Philippine Eagle Foundation, led the team to the area. Discovering and describing a new species like this requires intensive and persistent field work in many different areas to obtain specimens for comparative morphological and genetic study, and so are very time-consuming.

Discovery of this new species increases scientific knowledge of the geographic patterns of endemic biodiversity and evolution in this complex archipelago–which in turn provides increased incentive for protection of the region by Indigenous people, conservation organizations, and local and national government units. The area is one of the last strongholds of the endangered Philippine eagle, as well as the source of much of the freshwater in the densely populated lowlands. The discovery did not go unnoticed in the Philippines. A BBC Wildlife article included the new "Podo" as one of the most noteworthy new species of 2023, and a Rappler.com article published in the Philippines highlighted its importance for promoting conservation. The new species is another testament to the fruits of the dogged fieldwork carried out by our good friend Danny Balete, which keeps on yielding results.

DS BALETE



DS BALETE

(Top) Mossy cloud forest with abundant giant tree ferns provides the primary habitat for the new species.

(Above) Podogymnura intermedia*, the new soft-furred hedgehog from southeastern Mindanao.*

MEET THE FIELD'S NEW COLLECTIONS MANAGERS!

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1 **Michelle Brownlee** began her position as Anthropology Collections Manager for North America in late September. She initially joined the Museum as part of the collections team for the *Native Truths: Our Voices, Our Stories* exhibition before she was hired as an Anthropology Collections Assistant. In these roles, she has worked to connect Indigenous communities to their heritage and deliver the highest quality of care for the North American collections. Michelle has been a primary organizer of Indigenous Peoples Day and Native American Heritage Month programs and initiatives at the Museum. She also serves on the Museum-wide DEAI Council. Prior to joining the Field Museum, she was an American Indian Museum Fellow at the Minnesota Historical Society; while earning her degree at the University of Minnesota Morris, she was a Native American Student Success Peer Mentor. She has conducted fieldwork at the Cahokia Mounds State Historic Site in southern Illinois and has assisted the Hamline University Anthropology department faculty and Minnesota Indian Affairs staff with burial recovery efforts.

2 **Rachunliu "Chun" Kamei, PhD** is settling in as Collections Manager of Amphibians and Reptiles at the Field in January. Chun is a Naga of the Rongmei tribe from the hills of Northeast India. She taught Biology and Environmental Science as an Assistant Professor at Delhi University for six years before resigning in pursuit of a career in natural history. She received her PhD from the University of Delhi and served as a Marie Curie postdoc at the Natural History Museum, London, focusing on caecilians (a group of legless amphibians) from the northeast Indian region. Her field-based research on the caecilians of northeast India resulted in the most comprehensive study of caecilians from any one region in Asia. Her primary interests are taxonomy, systematics, biogeography, and natural history of amphibians, reptiles and swamp eels of India. Her research has produced the discovery and description of many new species of caecilians, frogs, lizards and swamp eels, and new genera and a new family (Chikilidae) of amphibians, as well as rediscoveries of species long thought to have been extinct. She is also committed to public outreach, and the engagement of local communities in conservation.

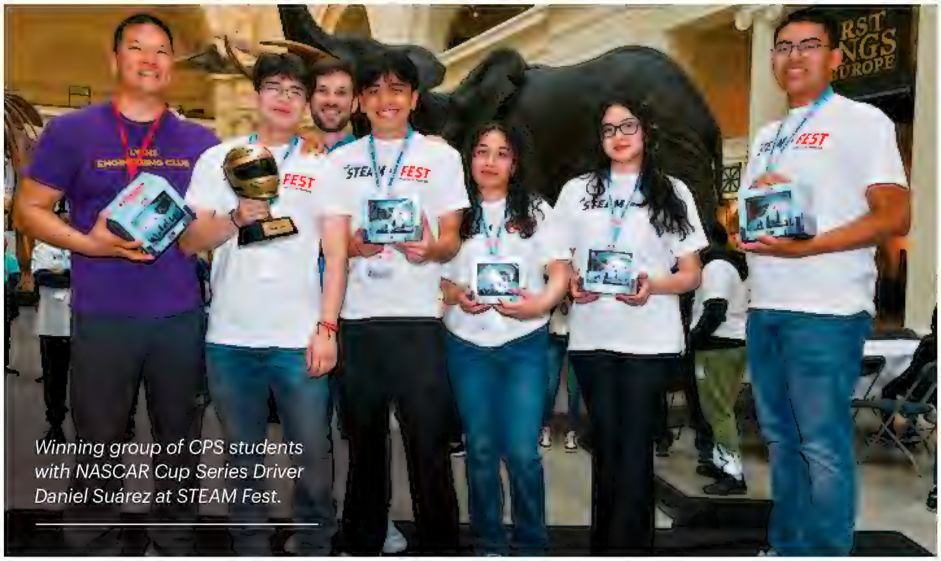
3 **Michael Donovan, PhD** joined us as Collections Manager of Paleobotany in March. He was previously Senior Collections Manager of Paleobotany and Paleoecology at the Cleveland Museum of Natural History, managing a collection similar to the Field's. Mike also holds appointments as Adjunct Assistant Professor, Department of Biology at Case Western Reserve University, and Research Collaborator at the National Museum of Natural History/Smithsonian. Mike received his PhD in Geosciences from Pennsylvania State University in 2017. His research focuses on the evolution of food webs through time, principally focusing on the evolutionary and ecological responses of plants and herbivorous insects to major environmental perturbations, including mass extinctions and climate change. Mike is experienced in assembling a large team of volunteers and students to help further his collections management work in Cleveland, and has developed successful outreach programs in paleobotany.

4 June will mark the arrival of **Kimberly Hansen**, as Collections Manager for Flowering Plants. Kimberly served as the Assistant Curator at the Marion Ownbey Herbarium at Washington State University, where she is completing her PhD in Plant Sciences. Kimberly has extensive experience in managing loans and specimens, including unprocessed specimens, as well as supervising students and volunteers. She has received several awards and funding for her work, including research grants from the International Association of Plant Taxonomists, the Gesneriad Society and the American Philosophical Society. Kimberly's research interests are focused on genomics, and she has developed relationships with researchers and herbaria in Latin America, especially Colombia and Ecuador. Her knowledge of neotropical plants will be a great asset to the John G. Searle Herbarium at the Field Museum.

5 Also in June, the Museum will welcome **Sean Keogh** as Collections Manager of Invertebrate Zoology. Sean is currently a PhD candidate in Ecology, Evolution, & Behavior at the University of Minnesota, as well as a Curatorial Assistant in the Mollusks & Crustaceans Collection at the Bell Museum. Sean has conducted fieldwork and research on fishes, amphibians, and mollusks for more than a decade. His main focus is the diversity, evolution, and biogeography of mollusks, particularly freshwater bivalves. His research combines inferences from the field, natural history collections, and experiments to answer questions in ecology, evolutionary biology, and conservation. Sean has an extensive background curating and studying museum collections. He has published in *Journal of Biogeography* and *Molecular Phylogenetics and Evolution*. He has also been active in mentoring high school students from underrepresented backgrounds in collections-based biodiversity research.

NASCAR PARTNERS WITH THE FIELD MUSEUM

BY KELSEY OVERBERG, INSTITUTIONAL ADVANCEMENT



Winning group of CPS students with NASCAR Cup Series Driver Daniel Suárez at STEAM Fest.

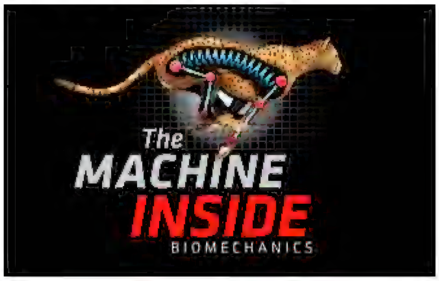
As excitement builds for the first-ever Chicago Street Race Weekend, the Field Museum was proud to partner with NASCAR and Chicago Public Schools (CPS) on a collaborative initiative designed to engage more than 22,000 students with racing-themed STEAM learning experiences and curriculum.

The competition, which officially kicked off in March, involved CPS students from all 43 Chicago STEM and STEAM schools competing in a design challenge, with every student in grades K-12 challenged to design their own race helmets. The students, organized in groups, received kits with simple materials, and designed race helmets that address key elements including safety, communication, ventilation, and other technological innovations. This culminated in the first-ever "STEAM Fest" at the Field Museum on May 2. At the event, nearly 500 student finalists interacted with Trackhouse Racing's NASCAR Cup Series driver Daniel Suárez, NASCAR engineers, and other industry STEM professionals at the event's championship round for a chance to attend the Chicago Street Race Weekend.

"When you consider the science and technology that exists across NASCAR, we have a unique opportunity to connect CPS students with STEM education in ways that are fun, engaging and hopefully inspiring," said Julie Giese, Chicago Street Race President. "Importantly, NASCAR and the Chicago Street Race are building foundational programs with the Field Museum and CPS that will benefit students and teachers now and for many years into the future."

Top-performing groups from each of the 43 schools earned invitations to STEAM Fest at the Field Museum. At the event, schools were assigned a new NASCAR challenge and competed against each other with the support of NASCAR Cup Series drivers and STEM professionals employed across the sport. The champion groups for each grade received complimentary tickets to the Chicago Street Race Weekend.

The partnership coincides with NASCAR's sponsorship of the return of *The Machine Inside: Biomechanics*, one of the Field Museum's most popular traveling exhibitions. It gives visitors a closer look at how animals—including humans—move and survive against the crushing forces of gravity, the pressure of water and wind, and the attacks of predators. In addition to highlighting nature itself, each section of the exhibition showcases technological breakthroughs that were inspired by nature's ingenuity, like Velcro, wind turbines, and chainsaws.



Biomechanics: The Machine Inside *is sponsored by NASCAR.*

The Field Museum also gratefully acknowledges the generous support provided by Discover, ITW and Searle Funds at The Chicago Community Trust for this exhibition from 2014 through 2021.

For more information on the NASCAR Chicago Street Race Weekend on July 1-2, please visit www.NASCARChicago.com

CPS students competing in the STEAM Fest crash barricade challenge.

ALL PHOTOS COURTESY NASCAR

Member Event

August 23, 12–1pm

BACKYARD METEORITES AND HOW TO FIND THEM

How common are meteorites?
What do they look like?
What are your chances of finding one?

We will answer these questions along with many more when you join Jim Holstein, Collections Manager of Meteorites to discover what it takes to find a meteorite. Learn how to identify meteorites and "meteor-wrongs" and hear the tale of one lucky farmer who found two different types of meteorites on his property.

Museum Hours

The Field Museum is open from 9am–5pm every day except Thanksgiving and Christmas Day, with last admission at 4pm. For special hours, parking, and public transportation options, visit **fieldmuseum.org/visit**.

The Field Museum salutes the people of Chicago for their long-standing support of the Museum through the Chicago Park District.

Official Airline of the Field Museum

This program is partially supported by a grant from the Illinois Arts Council Agency.

Field Museum Black History Month sponsored by Ardmore Roderick, Montenegro, Inc. and Overture Promotions.

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Throughout the month of February, the Field Museum celebrated the contributions of Black Americans to science, museums, culture, and history.

Scan the QR code to check out recorded events and stories featuring Field staff, scientists, historians, and Chicago community collaborators online!

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SUE THE T. REX SOAP COLLECTION

Experience the Cretaceous period like never before with SUE the *T. rex's* new line of soaps. Try them all and transport yourself back to when dinosaurs roamed the earth!

We collaborated with Nature's Trace Co. to create three distinct scents, each designed to evoke a different aspect of the Cretaceous period during SUE's reign. The Cypress Trees' scent is reminiscent of the lush forests that covered the earth. Magnolia Bloom brings to mind the colorful and exotic flora that dotted the landscape. The Ginger Root scent invokes the spicy, earthy aroma of the prehistoric spices that filled the air.

As a bonus, we also created SUE Suds with a gentle lavender and chamomile fragrance. Dubbed the *T. rex* tamer, this new-to-SUE scent will soothe and calm your little monster.

Visit store.fieldmuseum.org or scan to shop!